

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOKSABHA
UNSTARRED QUESTION NO. 801
TO BE ANSWERED ON FRIDAY, 23RD JULY, 2021**

INACCURATE PREDICTION OF MONSOON

**801. SHRI THIRUNAVUKKARA SU:
SHRI GNANATHIRAVIAM S:
SHRI VIJAYAKUMAR (ALIAS) VIJAY VASANTH :**

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether India Meteorological Department's prediction of monsoon during the current season in the national capital, Delhi and other parts of the country has turned out to be inaccurate;
- (b) if so, the details thereof and the reasons for such inaccuracies in its predictions;
- (c) whether the Government has any proposal to upgrade its equipments, technology and technical knowledge and to provide appropriate training to its staff;
- (d) if so, the details thereof; and
- (e) if not, the reasons therefor?

ANSWER

**THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR
MINISTRY OF SCIENCE AND TECHNOLOGY
AND EARTH SCIENCES
(DR. JITENDRA SINGH)**

(a) & (b) India Meteorological Department (IMD) has predicted the monsoon advance over different parts of the country in 2021 accurately about four to five days ahead. However, IMD's forecast issued on 13th June on onset over Delhi was proved incorrect.

Details pertaining to monsoon advance for the current year are given below :

- i. After the onset of monsoon over Kerala on 3rd June, Southwest Monsoon continued its advance over the country till 13th June in association with favourable atmospheric circulation and a low pressure system over Bay of Bengal.
- ii. By 13th June, it covered most parts of the country except northwest India. On 13th June, Numerical weather prediction (NWP) models suggested the favourable conditions with moist lower level easterly winds reaching to northwest India which may help in further advance of monsoon into most parts Madhya Pradesh; remaining parts of Uttar Pradesh; Delhi; Haryana and Punjab during the subsequent 48 hours.
- iii. However, on 14th June, weather analysis based on satellite and NWP model consensus indicated approach of a trough in mid- latitude westerly winds, leading to weakening of easterly winds over northwest India. Due to adverse influence of this mid-latitude westerly winds, further advance of monsoon into remaining parts of northwest India including Delhi was not expected. Accordingly, IMD issued an updated press release on 14th June indicating that "further advance of southwest Monsoon into remaining parts of northwest India including Delhi would be slow and delayed". This development of interaction with westerlies could not be anticipated by the weather prediction models.

- iv. On 16th June, another press release was issued indicating delay in monsoon advance into Delhi and slow progress into some parts of northwest India. Accordingly, monsoon advanced into some more parts of northwest India by 19th June.
- v. Since 20th June, there has been no further advance of monsoon due to weak/break monsoon conditions. Regular press releases were issued and updated to media from time to time on 22, 24, 26 and 30th June and 1st July indicating such delays in monsoon advance into remaining parts of northwest India including Delhi and weak/break monsoon conditions over the country. The delay in monsoon advance was mainly due to (a) no formation of low pressure system over Bay of Bengal, (b) no presence of monsoon trough at mean sea level near to Delhi, (c) 5-6 Western disturbances moved west to east across North India which dominated over the monsoon easterlies.
- vi. Later on the latest models indicated that the moist easterly winds in lower level from Bay of Bengal would spread into northwest India covering Punjab and Haryana by 10th July leading to advance of monsoon and increase in rainfall activity over the northwest India including Delhi from 10th July onwards.
- vii. Accordingly, the moist easterly winds have spread into northwest India. After 8th July, easterly winds at lower levels were established along the foothills and from 9th July onwards easterly winds were established over plains of Northwest India. These moisture laden easterly winds have led to increase in cloudiness and relative humidity. It also led to revival of monsoon over the region and occurrence of fairly widespread/widespread rainfall activity over east Rajasthan, HP, Uttarakhand, J&K and scattered rainfall over Punjab and west Rajasthan. However, it did not cause significant rainfall activity over Delhi even though, there was rainfall activity over neighbouring places around Delhi.
- viii. The monsoon covered the entire country on 13 July 2021.

(c)-(d) Various new initiatives, as mentioned below, have been undertaken by IMD, and by the ministry for betterment of prediction of natural disasters and dissemination of weather warnings :

- IMD is enhancing its observational network with installation of more number of Automatic Weather Stations (AWSs) and Automatic Rain Gauges (ARGs) across the country.
- 203 new raingauge stations have been added in the District-wise Rainfall Monitoring Scheme taking the total number of stations to 4940.
- Multi-Mission Meteorological Data Receiving & Processing System has been established and dedicated to the nation for augmentation of satellite derived products.
- 27 Doppler Weather Radars (DWR) are operational across the country to provide adequate warning in the event of approach of Cyclonic Storms, Monsoon Depressions, etc. DWR network also provides vital information for nowcasting purposes on mesoscale convective weather developments anywhere in the country.

- Location specific forecast within the capital cities as well as nowcast have been extended to 526 and more than 1000 stations respectively. Also three hourly nowcast warnings are now issued for severe weather for 739 districts.
- Impact based forecast is provided for all types of severe weather including cyclone, heat wave, cold wave, fog, heavy rain, thunderstorm to 739 districts and 25 capital cities.
- Common Alert Protocol (CAP) has been implemented as per World Meteorological Organization (WMO) standard for severe weather warning.
- Appropriate training to the staff involved in these activities is also being regularly carried out.

(e) Does not arise.